

IN THE CLAIMS

Please amend claims 25-33, as follows.

1 – 24. (Cancelled)

25. (Currently Amended) An information processing apparatus for transmitting data to a ~~printer an image forming apparatus~~, wherein the data is divided in a band unit in each of a plurality of colors, including first to fourth colors, in registration with a position of an image forming section of the image forming apparatus for each color, in which when an N-th page is printed, areas on the N-th page overlapping an (N-1)th page, overlapping an (N+1)th page, and overlapping no page, are defined as Na, Nc, and Nb, respectively, and the areas on the (N+1)th page overlapping the N-th page, overlapping an (N+2)th page, and overlapping no page are defined as (N+1)a, (N+1)c, and (N+1)b, respectively, said information processing apparatus comprising:

    a conversion unit configured to convert document data into image data;

    a division unit configured to divide the image data converted by said conversion unit in a band unit;

    a compression unit configured to compress the image data divided by said division unit;

    a calculation unit configured to calculate a size of the image data compressed by said compression unit;

    a first discrimination unit configured to discriminate, based on the size of the compressed image data calculated by said calculation unit, whether ~~data of the N-th page and the (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order both~~

of first and second conditions are met, wherein the first condition requires that the size of the compressed image data of the areas Na, Nb, Nc, and (N+1)a is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the areas (N+1)a, (N+1)b, (N+1)c, and Nc is smaller than the buffer size;

a second discrimination unit configured to discriminate whether data in the area Na has been transmitted to the ~~printer~~ image forming apparatus; and

a transmission unit configured to transmit data to the ~~printer~~ image forming apparatus, wherein said transmission unit transmits data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and second colors in the area (N+1)a on the (N+1)th page to the ~~printer~~ image forming apparatus, if said first discrimination unit discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met and if said second discrimination unit discriminates that the data in the area Na has been transmitted to the ~~printer~~ image forming apparatus,

wherein said transmission unit transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and the second colors in the area (N+1)a on the (N+1)th page to the ~~printer~~ image forming apparatus, if said first discrimination unit discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met and if said second discrimination unit discriminates that the data in the area Na has not been transmitted to the ~~printer~~ image forming apparatus,

wherein said transmission unit transmits data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the ~~printer image forming apparatus~~, if said first discrimination unit discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met and if said second discrimination unit discriminates that the data in the area Na has been transmitted to the ~~printer image forming apparatus~~, and

wherein said transmission unit transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the ~~printer image forming apparatus~~, if said first discrimination unit discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met and if said second discrimination unit discriminates that the data in the area Na has not been transmitted to the ~~printer image forming apparatus~~.

26. (Currently Amended) An information processing apparatus for transmitting data to a ~~printer an image forming apparatus~~, wherein the data is divided in a band unit in each of a plurality of colors, including first to fourth colors, in registration with a position of an image forming section ~~of the image forming apparatus~~ for each color, said information processing apparatus comprising:

- a conversion unit configured to convert document data into image data;
- a division unit configured to divide the image data converted by said conversion unit in a band unit;
- a compression unit configured to compress the image data divided by said division unit;

a calculation unit configured to calculate a size of the image data compressed by said compression unit;

a discrimination unit configured to discriminate, based on the size of the compressed image data calculated by said calculation unit, whether both of first and second conditions are met, wherein the first condition requires that the size of the compressed image data of an N-th page and a portion of the compressed image data of an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the (N+1)th page and a portion of the compressed image data of the N-th page is smaller than the buffer size; and

a transmission unit configured to transmit data to the printer image forming apparatus, wherein said transmission unit transmits data of the first color of the (N+1)th page to the printer image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination unit discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met, and

wherein said transmission unit transmits data of the first color of the (N+1)th page to the printer image forming apparatus before completion of transmission of data of the fourth color of the N-th page, if said discrimination unit discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met.

27. (Currently Amended) An information processing method for use in transmitting data to a printer an image forming apparatus, wherein the data is divided in a band unit in each of a

plurality of colors, including first to fourth colors, in registration with a position of an image forming section of the image forming apparatus for each color, in which when an N-th page is printed, areas on the N-th page overlapping an (N-1)th page, overlapping an (N+1)th page, and overlapping no page, are defined as Na, Nc, and Nb, respectively, and the areas on the (N+1)th page overlapping the N-th page, overlapping an (N+2)th page, and overlapping no page are defined as (N+1)a, (N+1)c, and (N+1)b, respectively, said information processing method comprising:

a conversion step for converting document data into image data;

a division step for dividing the image data converted by said conversion unit in a band step;

a compression step for compressing the image data divided by said division step;

a calculation step for calculating a size of the image data compressed by said compression step;

a first discrimination step of discriminating whether data of the N-th page and the (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order, based on the calculated size of the image data from said calculation step, whether both of first and second conditions are met, wherein the first condition requires that the size of the compressed image data of the areas Na, Nb, Nc, and (N+1)a is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the areas (N+1)a, (N+1)b, (N+1)c, and Nc is smaller than a buffer size;

a second discrimination step of discriminating whether data in the area Na has been transmitted to the printer image forming apparatus; and

a transmission step of transmitting data to the printer image forming apparatus,

wherein said transmission step transmits data of the first to the fourth colors in the area

Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and second colors in the area (N+1)a on the (N+1)th page to the printer image forming apparatus, if said first discrimination step discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met and if said second discrimination step discriminates that the data in the area Na has been transmitted to the printer image forming apparatus,

wherein said transmission step transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and second colors in the area (N+1)a on the (N+1)th page to the printer image forming apparatus, if said first discrimination step discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met and if said second discrimination step discriminates that the data in the area Na has not been transmitted to the printer image forming apparatus,

wherein said transmission step transmits data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the printer image forming apparatus, if said first discrimination step discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met and if said second discrimination step discriminates that the data in the area Na has been transmitted to the printer image forming apparatus, and

wherein said transmission step transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the printer image forming apparatus, if said first discrimination step discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met and if said second discrimination step discriminates that the data in the area Na has not been transmitted to the printer image forming apparatus.

28. (Currently Amended) An information processing method for use in transmitting data to a printer an image forming apparatus, wherein the data is divided in a band unit in each of a plurality of colors, including first to fourth colors, in registration with a position of an image forming section for each color, said information processing apparatus method comprising:

- a conversion step configured to convert document data into image data;
- a division step configured to divide the image data converted by said conversion unit in a band unit;
- a compression step configured to compress the image data divided by said division unit;
- a calculation step configured to calculate a size of the image data compressed by said compression unit;
- a discrimination step of discriminating, based on the size of the compressed image data calculated by said calculation step, whether data of an N-th page and an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order both of first and second conditions are met, wherein the first condition requires that the size of compressed image data of an N-th page and a portion of the compressed image data of an (N+1)th page is smaller

than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the (N+1)th page and a portion of the compressed image data of the N-th page is smaller than the buffer size; and

a transmission step of transmitting data to the ~~printer~~ image forming apparatus,

wherein said transmission step transmits data of the first color of the (N+1)th page to the ~~printer~~ image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met~~, and

wherein said transmission step transmits data of the first color of the (N+1)th page to the ~~printer~~ image forming apparatus before completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met~~.

29. (Currently Amended) A computer-readable storage medium storing an information processing program for controlling a computer to transmit data to a ~~printer~~ image forming apparatus, wherein the data is divided in a band unit in each of a plurality of colors, including first to fourth colors, in registration with a position of an image forming section for each color, in which when an N-th page is printed, areas on the N-th page overlapping an (N-1)th page, an overlapping (N+1)th page, and overlapping no page, are defined as Na, Nc, and Nb, respectively, and the areas on the (N+1)th page overlapping the N-th page, overlapping an (N+2)th page, and overlapping no page are defined as (N+1)a, (N+1)c, and (N+1)b, respectively, said information processing program comprising:

a conversion step for converting document data into image data;

a division step for dividing the image data converted by said conversion unit in a band step;

a compression step for compressing the image data divided by said division step;

a calculation step for calculating a size of the image data compressed by said compression step;

a first discrimination step of discriminating whether data of the N-th page and the (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order, based on the calculated size of the image data from said calculation step, whether both of first and second conditions are met, wherein the first condition requires that the size of the compressed image data of the areas Na, Nb, Nc, and (N+1)a is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the areas (N+1)a, (N+1)b, (N+1)c, and Nc is smaller than a buffer size:

a second discrimination step of discriminating whether data in the area Na has been transmitted to the printer image forming apparatus; and

a transmission step of transmitting data to the printer image forming apparatus, wherein said transmission step transmits data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and second colors in the area (N+1)a on the (N+1)th page to the printer image forming apparatus, if said first discrimination step discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met and if said second

discrimination step discriminates that the data in the area Na has been transmitted to the ~~printer image forming apparatus~~,

wherein said transmission step transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page and data of the first and second colors in the area (N+1)a on the (N+1)th page to the ~~printer image forming apparatus~~, if said first discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met~~ and if said second discrimination step discriminates that the data in the area Na has not been transmitted to the ~~printer image forming apparatus~~,

wherein said transmission step transmits data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the ~~printer image forming apparatus~~, if said first discrimination step discriminates ~~that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met~~ and if said second discrimination step discriminates that the data in the area Na has been transmitted to the ~~printer image forming apparatus~~, and

wherein said transmission step transmits data of the first and the second colors in the area Na, data of the first to the fourth colors in the area Nb and data of the third and the fourth colors in the area Nc on the N-th page to the ~~printer image forming apparatus~~, if said first discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met~~ and if said second discrimination step discriminates that the data in the area Na has not been transmitted to the ~~printer image forming apparatus~~.

30. (Currently Amended) A computer-readable storage medium storing an information processing program for controlling a computer to transmit data to a ~~printer~~ an image forming apparatus, wherein the data is divided in a band unit in each of a plurality of colors, including first to fourth colors, in registration with a position of an image forming section for each color, said information processing program comprising:

- a conversion step configured to convert document data into image data;
- a division step configured to divide the image data converted by said conversion unit in a band unit;
- a compression step configured to compress the image data divided by said division unit;
- a calculation step configured to calculate a size of the image data compressed by said compression unit;
- a discrimination step of discriminating, based on the size of the compressed image data calculated by said calculation step, whether ~~data of an N-th page and an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order both of first and second conditions are met, wherein the first condition requires that the size of compressed image data of an N-th page and a portion of the compressed image data of an (N+1)th page is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of the compressed image data of the (N+1)th page and a portion of the compressed image data of the N-th page is smaller than the buffer size; and~~  
        a transmission step of transmitting data to the ~~printer~~ image forming apparatus,  
        wherein said transmission step transmits data of the first color of the (N+1)th page to the ~~printer~~ image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that ~~the data of the N-th page and the~~

(N+1)th page cannot be stored in the memory either of the first and second conditions are not met, and

wherein said transmission step transmits data of the first color of the (N+1)th page to the printer image forming apparatus before completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met.

31. (Currently Amended) An information processing apparatus for transmitting data to an image forming apparatus which forms an image in a sequential order of first to fourth colors, said information processing apparatus comprising:

a discrimination unit configured to discriminate whether both of first and second conditions are met, wherein the first condition requires that the size of data of an N-th page and a portion of an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of data of an (N+1)th page a portion of an Nth page is smaller than a buffer size; and

a transmission unit configured to transmit data to the image forming apparatus,

wherein said transmission unit transmits data of the first color of the (N+1)th page to the image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination unit discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met, and

wherein said transmission unit transmits data of the first color of the (N+1)th page to the image forming apparatus before completion of transmission of data of the fourth color of the N-

th page, if said discrimination unit discriminates that ~~the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met.~~

32. (Currently Amended) An information processing method for use in transmitting data to an image forming apparatus which forms an image in a sequential order of first to fourth colors, said information processing method comprising:

a discrimination step for discriminating whether ~~data of an N-th page and an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order both of first and second conditions are met, wherein the first condition requires that the size of data of an N-th page and a portion of an (N+1)th page is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of data of an (N+1)th page and a portion of an N-th page is smaller than the buffer size; and~~

a transmission step for transmitting data to the image forming apparatus,

wherein said transmission step transmits data of the first color of the (N+1)th page to the image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met~~, and

wherein said transmission step transmits data of the first color of the (N+1)th page to the image forming apparatus before completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that ~~the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met.~~

33. (Currently Amended) A computer-readable storage medium for storing an information processing program for transmitting data to an image forming apparatus which forms an image in a sequential order of first to fourth colors, said information processing program comprising:

a discrimination step for discriminating whether data of an N-th page and an (N+1)th page can be stored in a memory if these data are mixed and transmitted in a printing order both of first and second conditions are met, wherein the first condition requires that the size of data of an N-th page and a portion of an (N+1)th page is smaller than a buffer size of a buffer memory provided in the image forming apparatus and the second condition requires that the size of data of an (N+1)th page and a portion of an N-th page is smaller than the buffer size; and

a transmission step for transmitting data to the image forming apparatus,

wherein said transmission step transmits data of the first color of the (N+1)th page to the image forming apparatus after completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that the data of the N-th page and the (N+1)th page cannot be stored in the memory either of the first and second conditions are not met, and

wherein said transmission step transmits data of the first color of the (N+1)th page to the image forming apparatus before completion of transmission of data of the fourth color of the N-th page, if said discrimination step discriminates that the data of the N-th page and the (N+1)th page can be stored in the memory both of the first and second conditions are met.